VOUCHER SAMPLING GUIDELINES

The Thermal Mark Lab examines thermal mark characteristics from reference (voucher) samples sent to us each year by the hatcheries to verify that the marks match the assigned mark and to quantify the variability within marks. The Thermal Mark lab determines if the mark shown on the otoliths matches the assigned (intended) mark and generates a summary report that includes: a representative image of the voucher otolith, measurements of the thermal mark, and a description of any lots that do not show the proposed mark (variants). These mark reports are added to our electronic repository:

http://www.taglab.org/OTO/reports/VoucherSummary.asp.

These voucher otoliths, images, and measurements are used by readers to identify the hatchery of origin of adult salmon, so it is important that we receive representative samples from the thermally-marked fish produced at each hatchery.

We would like to encourage you to:

1. Send your voucher samples as soon as possible after ponding, rather than after release, so that we examine the vouchers before the summer season to give you timely feedback.
2. Include thermal profiles. We enter these into our database to help us further understand each mark's unique characteristics, so please include them with the voucher samples. The more we know about each mark, the more we can improve marking protocols and the marks themselves.
3. Save back up voucher samples at your facility. Samples are sometimes lost in the mail or somewhere along the way to our lab. It would be better not to lose valuable thermal mark characteristics.

Guidelines for hatcheries preparing to submit their vouchers are provided below. If you have any questions, please contact Bev Agler at bev.agler@alaska.gov, or (907) 465-3498.

Otolith collection

1. Collect samples at time of ponding.
2. We would like representative samples of each thermal mark.

Sample from each different thermal mark group. For example, two different incubators marked on different dates or from different water sources have potentially different temperature histories, so we would like one sample from EACH incubator. Our guidelines are:

a) If you have 10 lots or less, send one sample of ~50 fish from each lot.
b) If you have > 10 lots per mark, send ONE ADDITIONAL SAMPLE for each additional 5 lots for that mark (any of the 5). For example:
    10 lots = 10 samples (10 bottles of 50 fish)
    10-15 lots = 11 samples
    15-20 lots = 12 samples
    20-25 lots = 13 samples
    25-30 lots = 14 samples
c) Bracket samples from large groups. For example, a group of incubators including eggs collected over multiple days should include a sample from the earliest and latest egg takes, and possibly the middle.

Please do not mix fish from different lots or mark groups in a single bottle. This prevents us from identifying possible variants in the thermal mark pattern.

Samples

1. Place each sample of ~50 fry in an adequately sized bottle along with enough 90% ethanol to cover the fry. DO NOT use formaldehyde or isopropyl alcohol; these solutions can damage the otoliths. The ratio of ethanol to fish should be approximately 2 to 1. The Thermal Mark Lab can provide the sample container upon request.
2. Decant and replace the alcohol preservative after the first 24 hours or when the color changes. Let the fish soak for at least 5 days before mailing.
3. Label each bottle so that the label faces out. Use a pencil, or test printed labels (see Appendix A. Voucher bottle labels) to make sure they do not run because alcohol will dissolve most inks. The label should include ALL of the following information:
    - Hatchery name
    - Brood year
    - Species
    - Date of sample
    - Cumulative temperature Units (CTU's)at the start and conclusion of marking
    - Incubator number (module, row, stack, tray/box, etc.)
    - Lot number
    - Thermal mark hatch code
4. Decant alcohol before shipping to avoid restrictions on shipment of flammable liquids.
5. Additional information
    a) Temperature record, preferably electronic, that includes temperature data from before, during and after the marking period for each sample. These thermal histories can be emailed to Lorna Wilson (lorna.wilson@alaska.gov). These thermal profiles help us understand each mark's unique characteristics.
    b) Additional notes regarding hatching of fish during marking, specific issues identified with accessory marks, system problems during marking, etc.

Shipment

Decant the alcohol after five days, leaving the alcohol-soaked fry in the bottle. Tightly cap the bottles and ship them to us immediately by 2nd day air. *Do not ship the bottles while they are full of alcohol*; the postal service has classified ethyl alcohol as a hazardous substance because of its flammable nature.

You will receive an email notification when vouchers are logged in to our system. We try to log them in as soon as possible, but if we receive them during the busy summer season, it can sometimes take a few days. Another email will be generated when the mark evaluation is complete. The latter email will include a link to your voucher report and include pictures of the mark. If you do not receive these emails, please let us know, and we will correct your email address in our directory.

Our goal is to process all voucher samples in a timely manner. ***Consequently, we must receive all hatchery vouchers as soon as possible after ponding.*** The Thermal Mark Lab will greatly appreciate your extra effort.

Please send the samples and all associated marking information to the address below, attention Megan Lovejoy, Lorna Wilson, and Bev Agler:

Alaska Department of Fish and Game
Mark, Tag and Age Laboratory
Attn: Megan Lovejoy, Lorna Wilson, and Bev Agler
10107 Bentwood Drive
Juneau, AK 99801

If you have any questions, please do not hesitate to contact us:
Bev Agler (907) 465-3498, bev.agler@alaska.gov;
Lorna Wilson (907) 465-2424, lorna.wilson@alaska.gov; or
Megan Lovejoy (907) 465-5972, megan.lovejoy@alaska.gov.

THERMAL MARK LAB PUBLIC WEBSITE

The Thermal Mark Lab public website (http://www.taglab.org/OTO/) has links to mark and voucher summary reports, general information about thermal marking and other otolith marking, and links to the port sampling manual and the voucher sampling guidelines.

THERMAL MARKING IN THE NORTH PACIFIC OCEAN

The North Pacific Anadromous Fish Commission (NPAFC) has a Working Group on Salmon Marking (http://npafc.taglab.org/default.asp). This website hosts contact information for mark coordinators by area, links to the NPAFC technical papers regarding salmon marking processes and reporting, and provides general information about thermal marking otolith. The Working Group's role is to:

- coordinate otolith mark patterns among the NPAFC member countries to minimize duplication
- create an international database of otolith mark releases
- exchange information on the development and standards of otolith mark techniques
- exchange information on the applications of otolith marks for salmon biology and stock management

Dion Oxman is the mark coordinator for Alaska. You can contact him via email: dion.oxman@alaska.gov; or phone: (907)465-3499.

Appendix A. Voucher bottle labels

HATCHERY:____________________________ **BY** _______

Species:____

Release Site(s):______________________________________

Lot:____________ **Inc:**____________ **Tray:**_____________

Sample Date:__________________________

CTU's:__________________ **Stock:**____________________

Target Hatch Code:_______ **Actual Hatch Code:**________

HATCHERY:____________________________ **BY** _______

Species:____

Release Site(s):______________________________________

Lot:____________ **Inc:**____________ **Tray:**_____________

Sample Date:__________________________

CTU's:__________________ **Stock:**____________________

Target Hatch Code:_______ **Actual Hatch Code:**________

HATCHERY:____________________________ **BY** _______

Species:____

Release Site(s):______________________________________

Lot:____________ **Inc:**____________ **Tray:**_____________

Sample Date:__________________________

CTU's:__________________ **Stock:**____________________

Target Hatch Code:_______ **Actual Hatch Code:**________

HATCHERY:____________________________ **BY** _______

Species:____

Release Site(s):______________________________________

Lot:____________ **Inc:**____________ **Tray:**_____________

Sample Date:__________________________

CTU's:__________________ **Stock:**____________________

Target Hatch Code:_______ **Actual Hatch Code:**________

HATCHERY:____________________________ **BY** _______

Species:____

Release Site(s):______________________________________

Lot:____________ **Inc:**____________ **Tray:**_____________

Sample Date:__________________________

CTU's:__________________ **Stock:**____________________

Target Hatch Code:_______ **Actual Hatch Code:**________

HATCHERY:____________________________ **BY** _______

Species:____

Release Site(s):______________________________________

Lot:____________ **Inc:**____________ **Tray:**_____________

Sample Date:__________________________

CTU's:__________________ **Stock:**____________________

Target Hatch Code:_______ **Actual Hatch Code:**________